Indications for cesarean section: final statement of the panel of the National Consensus Conference on Aspects of Cesarean Birth

In May 1985 a Canadian consensus process, modified from the approach developed by the US National Institutes of Health,[1] was started to establish appropriate clinical policies for aspects of cesarean birth. The planning committee, with the cooperation of the Society of Obstetricians and Gynaecologists of Canada and the Association of Professors of Obstetrics and Gynaecology, appointed a 10-member panel — 5 obstetricians, 1 general practitioner, 1 neonatologist, 1 epidemiologist, 1 lawyer and 1 consumer — selected from across the country. Between May and October the planning committee and its staff provided the panel with the following four background papers, which reviewed all the relevant literature published since 1960.*

- Cesarean section rates in Canada: a review of the data
- Indications for cesarean section for women with breech presentation: a review of the literature
- Indications for cesarean section for women with previous cesarean section: a review of the literature
- Criteria used for the diagnosis of dystocia: a review of approaches

In October the panel convened for 3 days to hear evidence from expert witnesses from Canada, the United States and Great Britain, to hear the views of interested consumers and health care professionals, to consider written briefs and to complete an interim statement. Between October 1985 and February 1986 the planning committee circulated the interim statement to over 30 000 individuals or organizations for their comments. The final statement was written by the panel in February, after consideration of these comments and reactions to the interim statement. The Society of Obstetricians and Gynaecologists of Canada and the Association of Professors of Obstetrics and Gynaecology have fully endorsed the final statement and have urged implementation of all its recommendations.

***Panel members:** Walter J. Hannah, professor and chairman, Department of Obstetrics and Gynecology, University of Toronto; Tom F. Baskett, associate professor, Department of Obstetrics and Gynecology, Dalhousie University, Halifax; Graham W. Chance, professor, departments of Paediatrics and of Obstetrics and Gynecology, University of Western Ontario, London, Ont.; Emily F. Hamilton, assistant professor, Department of Obstetrics and Gynecology, McGill University, Montreal; Shirley Huchcroft, Alberta Cancer Board, Calgary; James F. King, assistant professor, Department of Obstetrics and Gynecology, University of British Columbia, Vancouver; Bertrand Proulx, chief of staff, Notre Dame Hospital, Hearst, Ont.; Faye Ryder, Maple Ridge, BC; Margaret A. Somerville, professor, faculties of Law and Medicine, McGill University, Montreal; and Peter A. Woodrow, associate professor and teaching professor, Department of Obstetrics and Gynecology, University of Saskatchewan, Regina. **Planning committee:** Jonathan Lomas, Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton, Ont.; Eugene Vayda, associate dean, Division of Community Health, University of Toronto; Murray W. Enkin, professor, departments of Obstetrics and Gynecology and of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton; Geoffrey M. Anderson, assistant professor, Department of Epidemiology and Community Medicine, University of Ottawa; Betsy MacKinnon, Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton; Janet Barnsley, Division of Community Health, University of Toronto; and Lynda Marsh, Department of Clinical Epidemiology and Biostatistics, McMaster University, Hamilton.*

Reprint requests to: Jonathan Lomas, Department of Clinical Epidemiology and Biostatistics, Health Sciences Centre, McMaster University, 2C15-1200 Main St. W, Hamilton, Ont. L8N 3Z5

BACKGROUND

The public and the providers of obstetric care

The bibliographies on which these papers were based are available from the planning committee on request.

share an interest in and concern with the recent trends in cesarean birth rates in Canada. Although the maternal and perinatal mortality rates in Canada are comparable to those in European countries reporting the lowest rates, our cesarean birth rates are approximately twice as high (currently nearly 20%). The issues raised deserve careful examination in order to reduce unnecessary surgical intervention and to promote the safest forms of birth for Canadian women and their babies. It was the purpose of the National Consensus Conference on Aspects of Cesarean Birth to provide this examination.

The panel addressed four questions, and its response to these questions formed the basis of an interim consensus statement. It must be emphasized that in addressing these questions the panel was influenced primarily by convincing evidence from the research literature. The panel was given invaluable assistance in the literature review by the planning committee, which acted as a resource in assessing the strength of the data.

Four months after the development of the interim statement, the consensus panel reconvened to review the documents received in response to the statement. The documents included submissions from provincial medical associations, consumer groups and individuals, epidemiologists, medical practitioners, nurses and midwives across the country. The interim statement was then reviewed by the panel in light of the submissions received. All the points raised by the respondents were considered, and many were incorporated into the final statement.

The four questions considered by the panel were as follows.

- For which women and under what conditions should vaginal birth be planned in the circumstances of breech presentation?
- For which women and under what conditions should a trial of labour be carried out for women with a previous cesarean section?
- What criteria must be present to warrant a diagnosis of dystocia (prolonged or difficult labour)?
- What future research is required to clarify the use of cesarean section in deliveries involving breech presentation, previous cesarean section or dystocia?

DESIGNATION OF APPROPRIATE HOSPITAL FACILITIES

Before answering the four questions, the panel decided that it was necessary to make a statement about the resources required in hospitals so that the opportunity for safe labour and delivery can be offered to all women, particularly those with breech presentation or previous cesarean section.

To place the risks associated with deliveries involving previous cesarean section in the context of the risks associated with all forms of childbirth, the panel reviewed relevant data. On the basis of 11 819 births at a Canadian teaching centre,[2] the probability of emergency cesarean section being required for fetal distress, cord prolapse or antepartum hemorrhage was 2.70% (95% confidence interval [CI], 2.41% to 2.99%). In comparison, the rates of uterine rupture (excluding asymptomatic dehiscence) in women with a previous low-segment transverse cesarean section have been reported from four prospective studies.[3-6] The rate for those with a singleton vertex presentation who underwent a trial of labour was 0.22% (5/2268) (95% CI, 0.03% to 0.41%). The estimated* maternal morbidity rate was 22.90% (95% CI, 17.90% to 27.97%) in the elective cesarean section group and 18.25% (95% CI, 16.66% to 19.84%) in the trial-of-labour group (which included those with vaginal births and those having cesarean section who were in labour). The perinatal mortality rate was too low in each group to allow meaningful conclusions to be drawn about any differences between the two groups.

The panel recognized that rupture of the lower uterine segment may occasionally be catastrophic for the woman and her infant, although this event occurs much less frequently than other acute obstetric emergencies. Therefore, hospitals providing obstetric care should ensure the availability of blood, operating rooms, neonatal resuscitation, and nursing, anesthetic and surgical personnel so that a cesarean section can be started within approximately 30 minutes for any woman in labour, including a woman undergoing a trial of labour.

The panel also recognized that in a country as vast as Canada there are small hospitals without such resources, especially in remote areas. Nevertheless, by selecting and transferring women with high-risk pregnancies for management in other appropriate facilities, these small hospitals continue to provide valuable obstetric services to women in their communities. Such hospitals cannot be expected to electively manage breech delivery or trial of labour.

TERMINOLOGY

The panel was aware that the terminology used is not always neutral. There was consensus, however, that for ease and accuracy of communication commonly used terminology such as "trial of labour" would be used in the consensus statement, although some people object to some connotations of such terms. This use should not be taken

**We say "estimated" because these are likely overestimates, since it was assumed that each event (fever, hemorrhage, pulmonary embolism and so forth) occurred in separate people; however, presumably some people suffered more than one morbid event. Hence, these data do not represent the proportion of women who suffered these events but, rather, the total number of events as a proportion of the total number of women.*

as an endorsement by the panel of the continued use of this terminology, and the panel suggested that more acceptable alternatives should be considered.

QUESTIONS ADDRESSED

For which women and under what conditions should vaginal birth be planned in the circumstances of breech presentation?

There has been an increasing trend in Canada toward universal performance of cesarean section for breech presentation. Extensive review of the research literature has failed to uncover any evidence to support this trend. Therefore, cesarean section should not be performed for breech presentation unless it can be shown to be justified. That is, the panel has assumed that cesarean section is not indicated merely because the presentation is breech.

All the recommendations that follow refer to singleton breech pregnancies. If the evidence is compelling that one method of delivery is safer than another, the panel states that such a method should be *recommended*; if the evidence is less compelling but favours one method of delivery over another the panel states that such a method should be *offered*.

Frequently, there is uncertainty in recognizing the precise risks and benefits of the options for delivery in the case of breech presentation. This uncertainty arises from the paucity and equivocal nature of the research data regarding the relative risks and benefits of the different interventions. In particular, there is no research evidence to either support or refute the value of pelvimetry in the assessment of the safety of vaginal breech delivery. Although in practice planned vaginal birth is more likely to be offered to women with previous deliveries, no evidence was found in the literature to justify such a distinction.

Since the estimation of birth weight is necessarily imprecise, the following recommendations are based largely on evidence derived from actual rather than estimated birth weight. Therefore, ranges of estimated fetal weight and gestational age are given to guide the clinician in individual circumstances.

Recommendations

1. Planned vaginal birth should be *recommended* for either frank or complete breech presentation at 36 weeks' or more gestation and/or when the estimated birth weight is 2500 to 4000 g.

2. Because there was less certainty about the strength of the data, planned vaginal birth should be *offered* for either frank or complete breech presentation at 31 to 35 weeks' gestation and/or when the estimated birth weight is 1500 to 2500 g.

3. Cesarean section should be *offered* (but again there was less certainty about the adequacy of the data) for either frank or complete breech presentation at 30 weeks' or less gestation and/or when the estimated birth weight is less than 1500 g.

4. There were insufficient data on which to base a recommendation for frank or complete breech presentation when the estimated birth weight is more than 4000 g. The attending physician's judgement about the most appropriate course of action should determine which delivery method is suggested.

5. Consensus was reached on the basis of clinical experience only (because the available data were inadequate) that cesarean section should be recommended for footling breech presentation.

6. Recommendations 1 through 5 will require modification in the presence of complicating factors, including oligohydramnios and hyperextension of the fetus's head, both of which would tend to favour cesarean section, and fetal congenital anomaly, which would tend to favour vaginal birth.

7. Apart from exceptional circumstances involving the delivery of the second twin, the panel reached consensus (on the basis of clinical experience) that total breech extraction in singleton breech presentation has virtually no place in modern obstetric practice.

8. The panel emphasizes that the experience of the attending physician is a crucial factor affecting the decision for planned vaginal breech birth and that medical education programs should promote the acquisition and maintenance of the skills required for safe vaginal breech birth.

For which women and under what conditions should a trial of labour be carried out for women with a previous cesarean section?

The following recommendations are based on firm evidence from the literature. In addition, the panel considered a number of areas in which the evidence was less compelling. The panel therefore notes the following: (a) a trial of labour after more than one cesarean section may be a reasonable alternative to repeat elective cesarean section, but to date there are not sufficient data to confirm or refute this; (b) there is insufficient evidence to make a recommendation regarding a trial of labour with twins or with breech presentation; (c) although the data on oxytocin stimulation are reassuring, more information is necessary, and in the meantime oxytocin should be used with caution; and (d) there are insufficient data in the literature to allow comment on induction of labour.

Recommendations

1. A trial of labour after a previous cesarean

section should be recommended for women who meet all the following criteria: one low transverse cesarean section, a singleton vertex presentation and no absolute indication for cesarean section (such as placenta previa). The data indicate that women who have previously had a vaginal birth as well as a cesarean section are particularly likely to give birth vaginally. The likelihood of vaginal birth after cesarean section appears to be independent of the indication for the first cesarean section (including "cephalopelvic disproportion" and "failure to progress"). Suspected fetal macrosomia (birth weight over 4000 g) is not in itself a contraindication to a trial of labour.

2. A history of classic, low vertical or unknown uterine incision or hysterotomy remains a contraindication to a trial of labour.

3. Epidural anesthesia may be used for the usual obstetric indications.

4. In addition to the recommendations made under "Designation of appropriate hospital facilities", the panel recommends the following: (a) antenatal evaluation by a qualified obstetrician, (b) intrapartum notification of and/or consultation with the obstetrician or surgeon and the anesthetist to be involved in an emergency and (c) skilled evaluation of labour and routine maternal and fetal surveillance. In addition, the panel feels that the continuous presence of the physician during labour is not necessary. Continuous electronic monitoring of the fetal heart rate is not routinely indicated; however, minimum standards for recording the fetal heart rate in labour should be followed (i.e., auscultation after a contraction every 15 minutes in the active phase of the first stage of labour and every 5 minutes in the second stage).

5. Adequate information should be provided so that a woman can make an informed decision on the choice between repeat elective cesarean section and trial of labour. Every effort should be made to accommodate this decision. Physicians working in hospitals that are unable to fulfil the woman's wishes should so inform the patient and advise her of the nearest facility that can.

What criteria must be present to warrant a diagnosis of dystocia (prolonged or difficult labour)?

The term dystocia is generally used to encompass labour that is considered abnormally slow or "nonprogressive". In relation to cesarean section the diagnoses "cephalopelvic disproportion" and "failure to progress" have been grouped together as "dystocia" and, as such, are reported as the indication for approximately half of all primary cesarean sections. Thus, directly, and indirectly through its contribution to repeat cesarean section, dystocia as it is currently diagnosed accounts for 50% to 60% of all cesarean sections in Canada.

To avoid the confusion of different diagnostic and management categories, women with malpresentation, multiple pregnancy, preterm labour or fetal distress, and those undergoing induction of labour are excluded. Moreover, because dystocia is almost exclusively diagnosed in nulliparous women, this statement is confined to nulliparous women at term with a single, vertex presentation in spontaneous labour, who represent approximately one third of the obstetric population.

The following observations and recommendations regarding dystocia are based largely on informed clinical opinion because of the paucity of adequate scientific evidence. Therefore, they should be regarded as working guidelines.

Guidelines

1. Before a diagnosis of dystocia is considered, the woman must be in established labour; the latent phase of labour is *not* considered established labour. Established labour is diagnosed in the presence of painful, regular uterine contractions and cervical effacement with at least 3 cm dilation. Rupture of the membranes or a bloody "show", or both, may be contributory but are not in themselves diagnostic of established labour.

2. Slow progress in labour is not necessarily a problem in itself, but it is the best available indicator in women in whom dystocia is likely to develop. In the first stage of established labour a diagnosis of dystocia is warranted if there is a lack of progressive cervical dilation (less than 0.5 cm/h) over a 4-hour period.

3. The causes of dystocia, the commonest of which is ineffective uterine action, should be sought. Such a diagnostic approach will identify women with dystocia at an early stage and allow management options (e.g., oxytocin augmentation, hydration, change of position or ambulation) aimed at correcting ineffective uterine action. In some women no intervention is indicated. In all cases of nonprogressive labour careful surveillance of the fetal heart rate is indicated, as outlined in recommendation 4 in the preceding section.

4. At this early stage cesarean section is not appropriate. It should be considered much later, and then only after satisfactory augmentation of uterine action has failed to secure progress after a reasonable time.

5. While there is cause for concern if the second stage of labour exceeds the usually accepted duration, no strict time limits should be set as long as there is progressive descent of the fetus's head and no sign of fetal compromise. In particular, slow, progressive descent with epidural analgesia does not require early operative intervention. Maternal expulsive efforts should not be encouraged until the fetus's head has descended to the pelvic floor.

6. If, in the presence of adequate uterine action, there is lack of descent and increasing "caput" and moulding, the diagnosis of cephalopelvic disproportion is confirmed.

What future research is required to clarify the use of cesarean section in births involving breech presentation, previous cesarean section or dystocia?

From the evidence considered by the panel it became obvious that further research is required in many areas, including the following.

Breech presentation

Randomized controlled trials are essential to determine the efficacy and safety of external cephalic version as well as other measures that could reduce the number of breech births and to determine the most appropriate mode of birth when the fetus weighs less than 1500 g.

Previous cesarean section

Appropriately designed studies should be conducted to assess the frequency of major complications in the mother, perinatal mortality, and short-term and long-term sequelae for the child in the following circumstances.

- Trial of labour after more than one low transverse cesarean section.
- Trial of labour with breech presentation or twins after low transverse cesarean section.
- Oxytocin augmentation of labour after low transverse cesarean section.
- Induction of labour after low transverse cesarean section.

In addition, equally rigorous studies should be carried out to assess the effect on the outcome of labour of continuous support by nurses or others and to measure psychosocial consequences not only for the woman but also for the child and the family of women undergoing a trial of labour as opposed to elective cesarean section.

Dystocia

Studies should be done to assess (a) the specificity and sensitivity of the proposed working guidelines for the diagnosis of dystocia as predictors of the need for cesarean section, (b) the value of early correction of ineffective uterine action in the prevention and management of dystocia, and (c) the value of alternative methods (e.g., ambulation, nipple stimulation and change of position in labour) for the prevention and management of dystocia.

General

A representative population survey of women who have given birth by cesarean section and of women who have delivered vaginally should be done to assess their levels of satisfaction and preference for subsequent birth. In addition, regional and national studies of changes in obstetric practice pertaining to cesarean section in the next decade are needed.

MEDICOLEGAL CONSIDERATIONS

The panel was aware of the complex and difficult medicolegal issues raised in the four questions considered. The legal advice available to the panel indicated that careful review with the woman of the risks and benefits to her and her infant associated with different delivery methods is essential to informed consent. Informed consent and its documentation are the over-riding legal considerations.

The panel recognized that there is widespread and understandable concern on the part of obstetric practitioners about the medicolegal aspects of pregnancy and childbirth. Many physicians feel that some clinical decisions are unduly influenced by potential litigation pressures and by consumer expectations, which are sometimes unrealistic. The combination of these influences has contributed to the rising rates of cesarean section in the three areas considered by the panel.

This consensus statement is the result of a systematic review of the best available evidence and may serve as a reasonable and defensible basis for clinical practice.

Special thanks are owed to Dr. Friederike Perl, McMaster University, for her work on dystocia and her other significant contributions to the consensus process; Professor Robin F. Roberts, McMaster University, for his extensive analysis of the data for the consensus panel; Dr. Michael Q. Ramsden, McMaster University, for his design and application of the panel's decision-analytic models; and Jerry Elliott and Dr. Itzhak Jacoby, US National Institutes of Health, for their advice and assistance on the consensus technique.

This work was supported by a grant from Physicians' Services Incorporated Foundation, Toronto.

References

1. Jacoby I: The consensus development program of the National Institutes of Health. Current practices and historical perspectives. *Int J Tech Assess Health Care* 1985; 2: 420–432
2. Cohen MM, Ong B, Palahniuk R et al: Obstetrical anesthesia and cesarean section. Presented at the National Consensus Conference on Aspects of Cesarean Birth, Niagara-on-the-Lake, Ont, Oct 24–26, 1985
3. Gibbs CE: Planned vaginal delivery following cesarean section. *Clin Obstet Gynecol* 1980; 2: 507–515
4. Martin JN, Harris BA, Huddleston JF et al: Vaginal delivery following previous cesarean birth. *Am J Obstet Gynecol* 1983; 146: 255–263
5. Meier PR, Porreco RP: Trial of labour following cesarean section: a two year experience. *Am J Obstet Gynecol* 1982; 144: 671–678
6. Paul RH, Phelan JP, Yeh S: Trial of labour in the patient with a prior cesarean birth. *Am J Obstet Gynecol* 1985; 151: 297–304